

REMARKS/ARGUMENTS

Prior to this amendment, claims 1-24 were pending. In this amendment, claims 2-3 and 23-24 are amended. No claims are canceled or added. No new matter is added. Thus, claims 1-24 remain pending.

Objections to the Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter for what a "computer readable medium" comprises.

However, the specification does provide an antecedent basis for what a "computer readable medium" comprises. For example, paragraph 54 provides examples of data storage means (e.g. RAM, flash, tape,...), which one skilled in the art knows to be equivalent to a "computer readable medium." Accordingly, Applicants respectfully request withdrawal of this objection.

Claim Rejections - 35 USC § 112, first paragraph

Claims 2, 23, and 24 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claim 2 now recites "running the new test patterns." Support can be found, for example, at paragraph 35.

Claim 23 has been rewritten in independent form and no longer recites "testing every combination of fan-in and fan-out resources connectable to a first routing resource of a subset of resources." Claim 24 is now dependent on claim 23.

Applicants respectfully request withdrawal of these rejections.

Claim Rejections - 35 USC § 103(a), Culbertson

Claims 1-24 rejected under 35 U.S.C. 103(a) as being unpatentable over Culbertson et al (US Pat. 5,790,771; hereinafter referred to as Culbertson).

Claim 1 is allowable over Culbertson as Culbertson fails to teach or suggest all the elements of claim 1. For example, claim 1 recites:

identifying a subset of the routing resources, wherein the subset comprises one or more routing resources that respectively occur in the most failed test paths; and

generating new test patterns including program bits that define new test paths for testing a first routing resource of the subset of the routing resources, wherein each of the new test paths includes:

the first routing resource; and

a combination, not included in the other new test paths, of fan-in and fan-out resources that are programmably connectable to the first routing resource,

wherein the new test paths test every combination of fan-in and fan-out resources that are programmably connectable to the first routing resource.

In Culbertson, all of the resources of the system are assumed to be defective. *See Culbertson*, FIG. 4A step 51 and FIG. 5A. A detection subsystem 33 configures the resources into a number of random number generators. *Id.*, FIG. 2 and 8a (step 111), col. 6 lines 43-45. For each random number generator whose output is accurate (e.g. 82-85), the resources are marked as good. *Id.*, FIG. 4A steps 54-56 and FIG. 5B. As a search to find all of the good resources, the detection subsystem 33 reconfigures the resources into different random number generators and performs additional checks. *Id.*, FIG. 4B step 59. This reconfiguration is continued until substantially all of the good (non-defective) resources have been marked as non-defective, and the defective resources are identified. *Id.*, col. 7 lines 1-5 and lines 55-60.

It is only at the end of the reconfigurations that the resources occurring only in failed tests paths are identified. *Id.*, col. 9 lines 28-30. Since this identification of defective resources does not occur until the tests are done, Culbertson does not generate new test patterns. Accordingly, Culbertson does not teach or suggest “*generating new test patterns including program bits that define new test paths for testing a first routing resource of the subset of the routing resources,*” as recited in claim 1.

Furthermore, at page 5, the Office Action asserts that FIG. 5C (71b, 71c, or 71d) teaches new test patterns, each including the first routing resource. However, not all of the new generators in FIG. 5C include the same resource. For example, generator 95 does not include resource 71b. Accordingly, Culbertson does not teach or suggest “*wherein each of the new test paths includes: the first routing resource,*” as recited in claim 1.

Moreover, the Office Action states that routing resources could be fan-in and fan-out resources. *Id.*, col. 4 line 59. However, whether something could be done is not the legal standard. The standard is whether one would be motivated to make a modification, with an explicit rationale for how and why the modification would be done. See MPEP 2141(III) and 2142 and *Innogenetics, NV v. Abbott Labs*, 85 USPQ2d 1641, 1648 n. 3 (Fed. Cir. 2008).

Also, this I/O circuit is a function that an FPGA can perform and has no relation to a particular resource, or testing that resource. There is no discussion how the I/O circuit pertains to the defective resource. Accordingly, this section of Culbertson does not mention fan-in and fan-out resources to a particular resource and does not suggest “*a combination, not included in the other new test paths, of fan-in and fan-out resources that are programmably connectable to the first routing resource.*” as recited in claim 1.

For at least these reasons, claim 1 and its dependent claims are allowable over Culbertson.

Claims 9 and 15

Applicants submit that independent claims 9 and 15 should be allowable for reasons mentioned with respect to claim 1. As claim 9 is allowable, dependent claims 10-14 are allowable for at least the same rationale. As claim 15 is allowable, dependent claims 16-20 are allowable for at least the same rationale.

Claim Rejections - 35 USC § 103(a), Culbertson, Abramovici

Claims 4, 11, 23, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Culbertson in view of Abramovici et al (US Pat. 6,966,020; hereinafter referred to as Abramovici).

Claim 23 is allowable over these cited references, either alone or in combination, as those references fail to teach or suggest all the elements of claim 23. For example, claim 23 recites:

*wherein the testing a new test pattern includes testing a clock control point and comprises:
scanning in a first value to a failed resource;*

scanning in a second value to a data control point coupled with the failed resource;
scanning out the value stored in the failed resource and comparing that value to the first value;
transmitting a clock signal from the clock control point to the failed resource; and
scanning out the value stored in the failed resource and comparing that value to the second value.

At page 10, the Office Action concedes that Culbertson does not teach or suggest the above claim element, but that Abramovici does.

Abramovici compares the test patterns propagated along one set of resources (WUT 32) to the test patterns propagated along another set of resources (WUT 33). *See Abramovici*, col. 6 lines 59-62.

In Abramovici, the values from one resource is compared to a value from a different resource. In contrast, claim 23 recites comparing the value scanned out from a resource to the first value that was scanned into the same failed resource. Accordingly, the proposed combination does not teach or suggest “*scanning out the value stored in the failed resource and comparing that value to the first value,*” as recited in claim 23.

Additionally, Applicants do not understand how comparing test patterns of other resources suggests a modification that uses a clock signal to test a failed resource. Applicants request more than a conclusory statement that a clock signal would be used. An explicit rationale for how and why is required, as is pointed out above.

For at least these reasons, claim 1 and its dependent claims are allowable over Culbertson.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

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